Title:
2007 Western New York Sweet Corn Pheromone Trap Network

Project Leader(s):
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Cooperator(s):
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Abstract:
Three of the important insect pests of sweet corn, European corn borer, corn earworm, and fall armyworm, cause damage to ears in their "worm" or larval stage. These pests are moths in their adult stage. A network of traps baited with the pheromones that male and female moths use to find each other has been operating across western New York for the past ten seasons. The trap network allows growers, consultants, Cooperative Extension, and vegetable processor field staff to track the flights of the adults of these three pests, and make informed decisions about when sweet corn fields need to be scouted or treated with an insecticide. This project is funded in part by in-kind contributions from growers and consultants who host and check traps.

Background and justification:
Sweet corn for the fresh and processing markets is an important crop throughout western NY. Fresh market sweet corn is grown on approximately 29,000 acres in New York with a value of 75.5 million dollars, while processing sweet corn is grown on approximately 18,400 acres with a value of 8.9 million dollars (2006 figures). Three major "worm" pests of sweet corn, European corn borer (ECB-E and ECB-Z), corn earworm (CEW), and fall armyworm (FAW) are moths in the adult stage; and can be monitored using pheromone traps. Pest management is an especially important aspect of fresh sweet corn production because the unhusked ear is marketed, and the buyer is frequently very sensitive to insect damage or the presence of larvae in the ear. Harvest quality requirements are different for processing corn, which usually receives fewer insecticide applications than fresh market corn. Integrated pest management practices are widely used on both crops to determine the need for insecticide applications. Pheromone trap catches provide valuable information to growers, consultants, and processor field staff making pest management decisions. Pheromone trap catches help growers and consultants decide when to start scouting fields for ECB, reinforce what scouts are finding, help choose the best spray materials for the pest complex that's present, and alert the industry to the arrival of the two migratory pests, CEW and FAW.

Pheromone trap catches are an integral part of weekly pest update newsletters sent by the Cornell Vegetable Extension program to approximately 260 subscribers in nine counties. The trap catches are used by a private consulting firm handling sweet corn pest management for the two

major food processors to time scouting and help make management decisions on approximately 18,400 acres of processing sweet corn.
The trap catches are also posted on the NYS IPM Program web site, the Northeast Weather Association web site, and a regional web site that includes trap catches from several northeastern states, making the information available to a large number of growers and extension personnel.

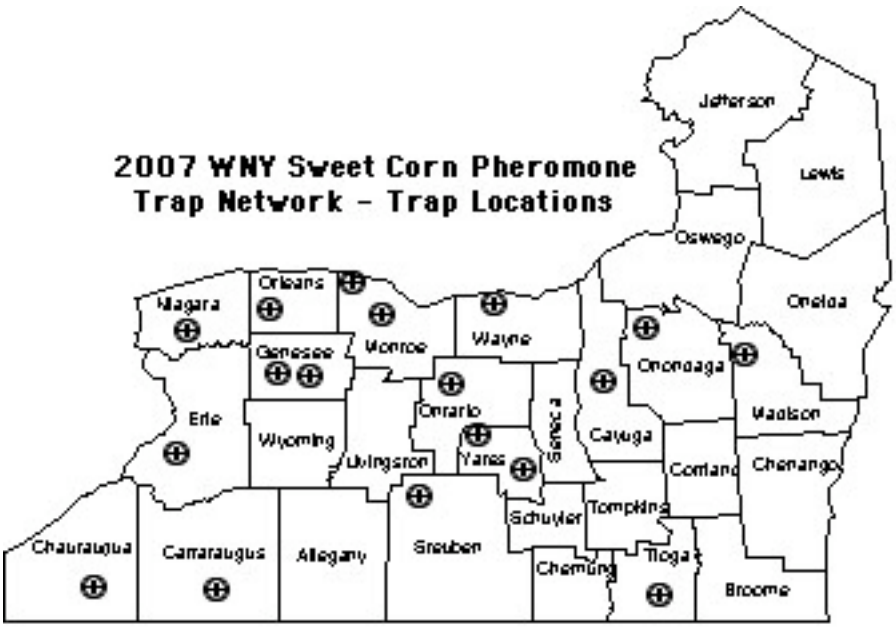
Objectives:

1) Establish and maintain a network of pheromone traps for sweet corn pests in western and central NY.
2) Provide regional trapping information and recommendations to agents, processor field staff, and consultants working with sweet corn.
3) Provide regional trapping information to growers, along with scouting and threshold recommendations.

Procedures:

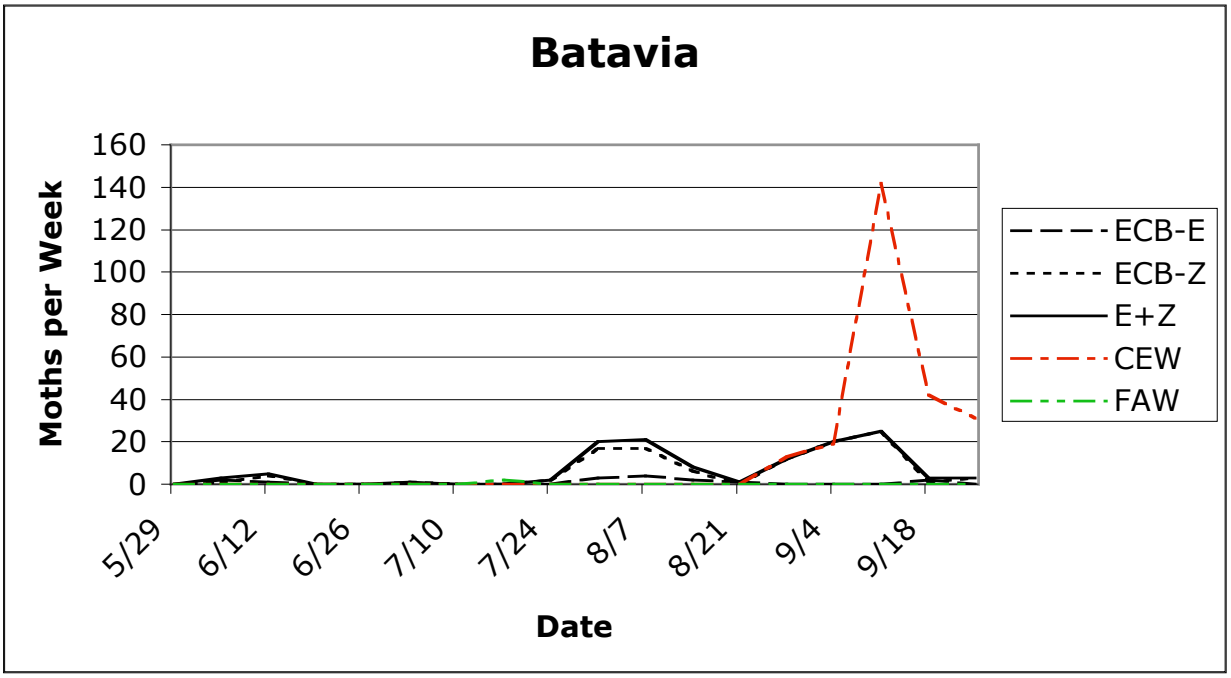
1) Sets of one each of ECB-E, ECB-Z, CEW, and FAW traps were placed at each trapping location (Fig. 1). Scentry Heliothis net traps were used to trap ECB and CEW. The BCS/Agrisense Unitrap was used for FAW. Lures from Trece Inc. were used for both races of ECB, and lures were replaced every two weeks. Lures from Hercon Inc. were used for CEW, and replaced every two weeks. Lures from Scentry Inc. were used for FAW, and were replaced every three weeks. ECB traps were set up in mid-May at some locations, and as processing fields approached tassel emergence in other locations. CEW and FAW traps were set up in early to mid-July. Traps were placed at least 40 meters apart in grassy areas near corn fields, avoiding areas near hedgerows where air circulation is poor. Traps are mounted on posts such that the bottom of the trap is 0-6" above the grassy canopy. Whenever possible, traps were moved to new fields as the previous fields matured and became less attractive to moths.
2) Cooperators checked traps weekly on Monday or Tuesday and sent catch numbers to Abby Seaman via phone or email. Weekly catches for each location were collated and posted, along with interpretation, and scouting and thresholds recommendations for fresh market sweet corn, on Tuesday evening on the vegetable extension staff electronic listserv and the following day on the NYS IPM and PestWatch web sites.
3) Information posted on the listserv was incorporated into crop and pest updates mailed weekly by local extension programs to approximately 260 subscribers, or provided to growers via direct contact with consultants.

Figure 1.



Results and discussion:
European corn borer flights were mostly moderate in 2007, with high numbers at just a couple of locations for the first generation flight. The migratory CEW was first detected in late July, and numbers reached high extremely high levels throughout the region by late August. Many farmers reported higher than acceptable levels of infestation at harvest despite multiple insecticide applications. FAW were caught throughout the trap network area starting in late July, but numbers remained moderate except for a few locations where counts were high in mid-September. Graphs of the moth flights for each trapping location are shown in Figure 2.

Figure 2


Batavia
Moths per Week
160
140
120
100
80
60
40
20
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

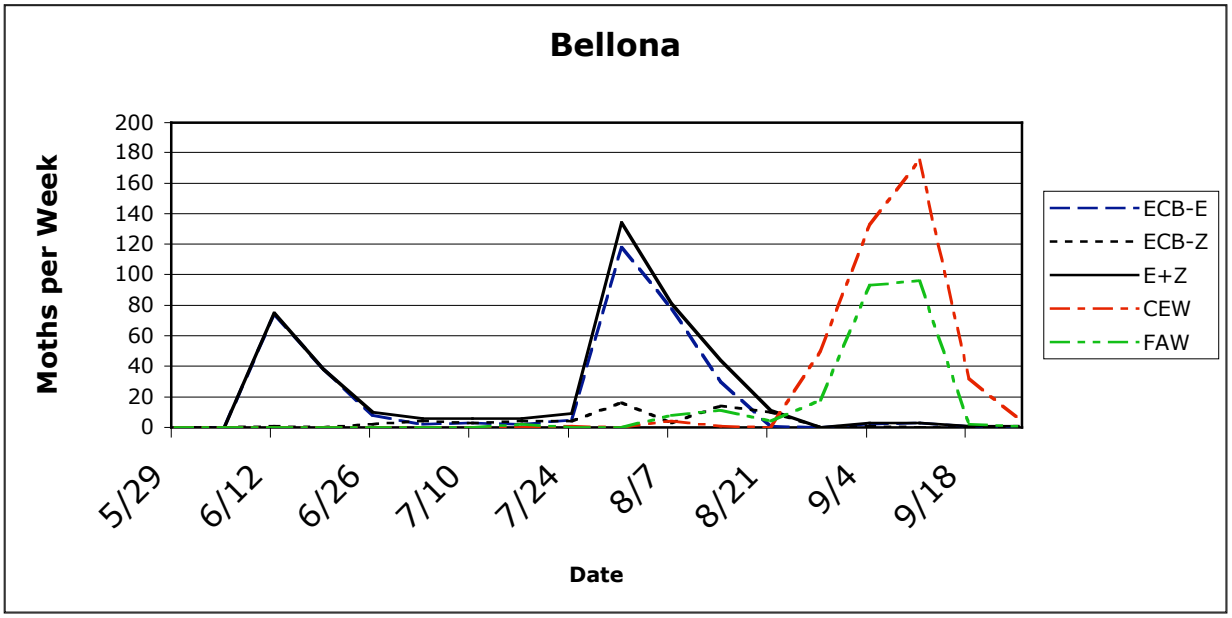
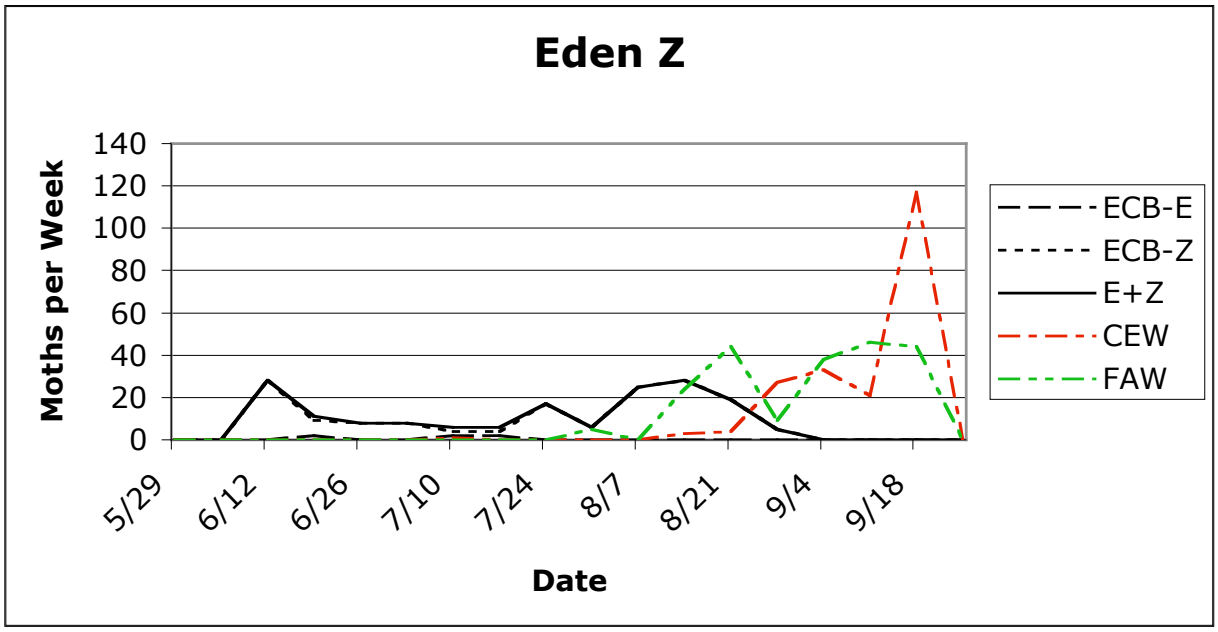

Bellona
Moths per Week
200
180
160
140
120
100
80
60
40
20
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


Eden Z
Moths per Week
140
120
100
80
60
40
20
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

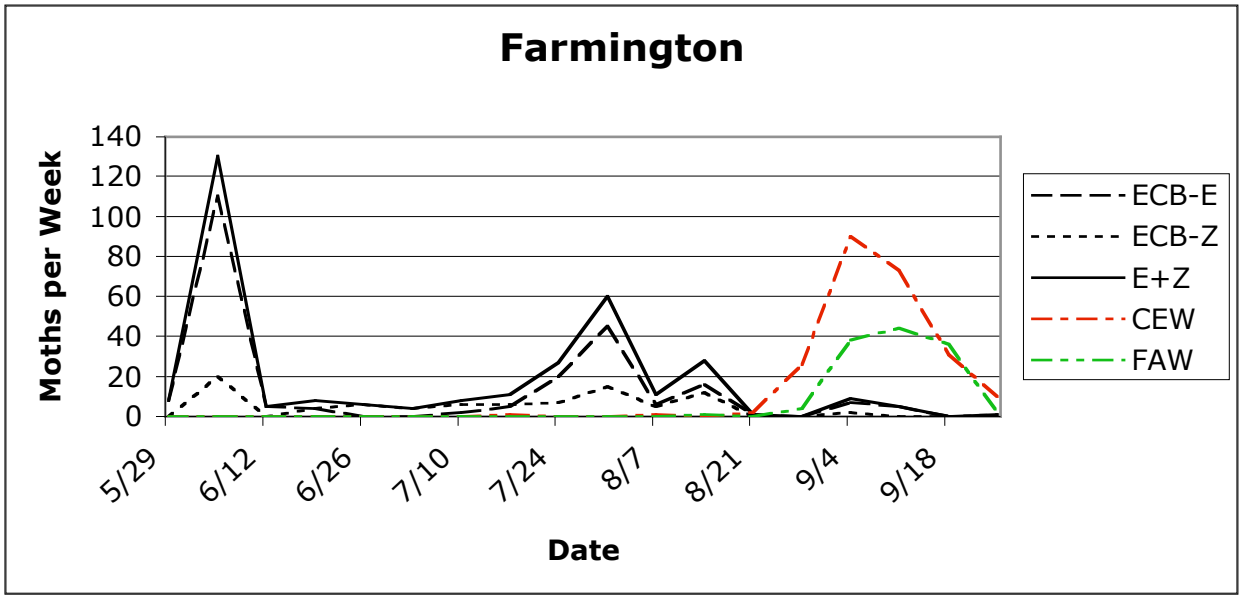
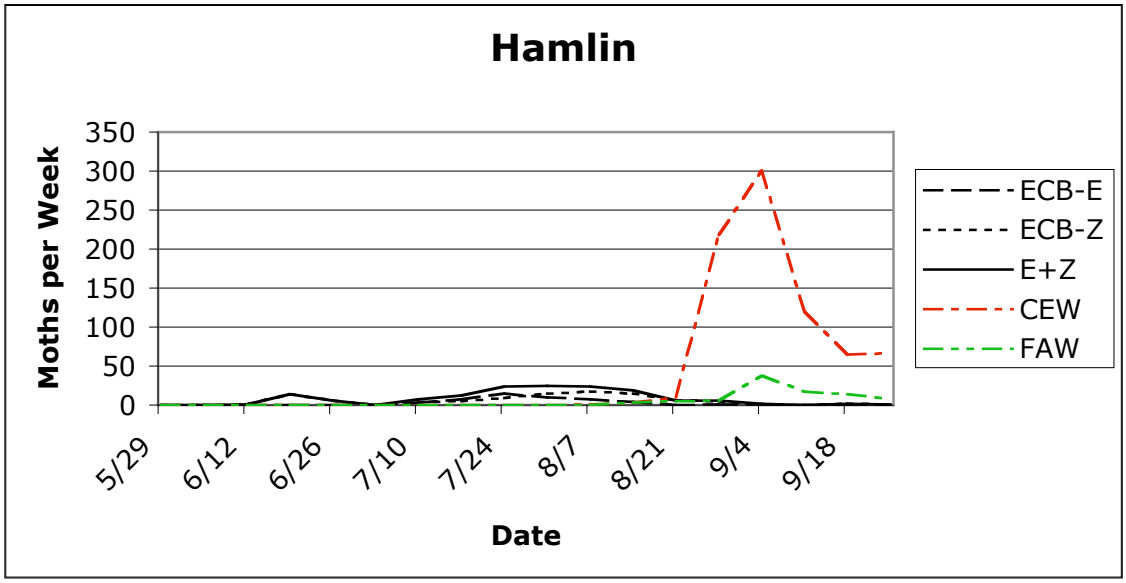

Farmington
Moths per Week
140
120
100
80
60
40
20
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


Hamlin
Moths per Week
350
300
250
200
150
100
50
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

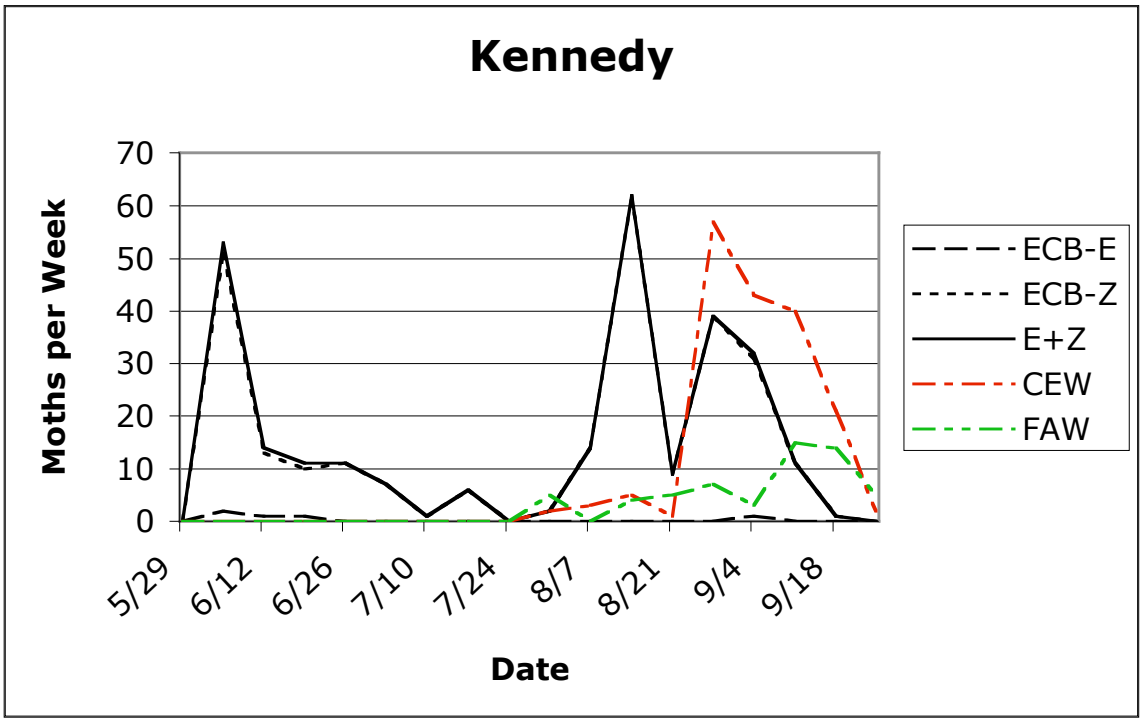
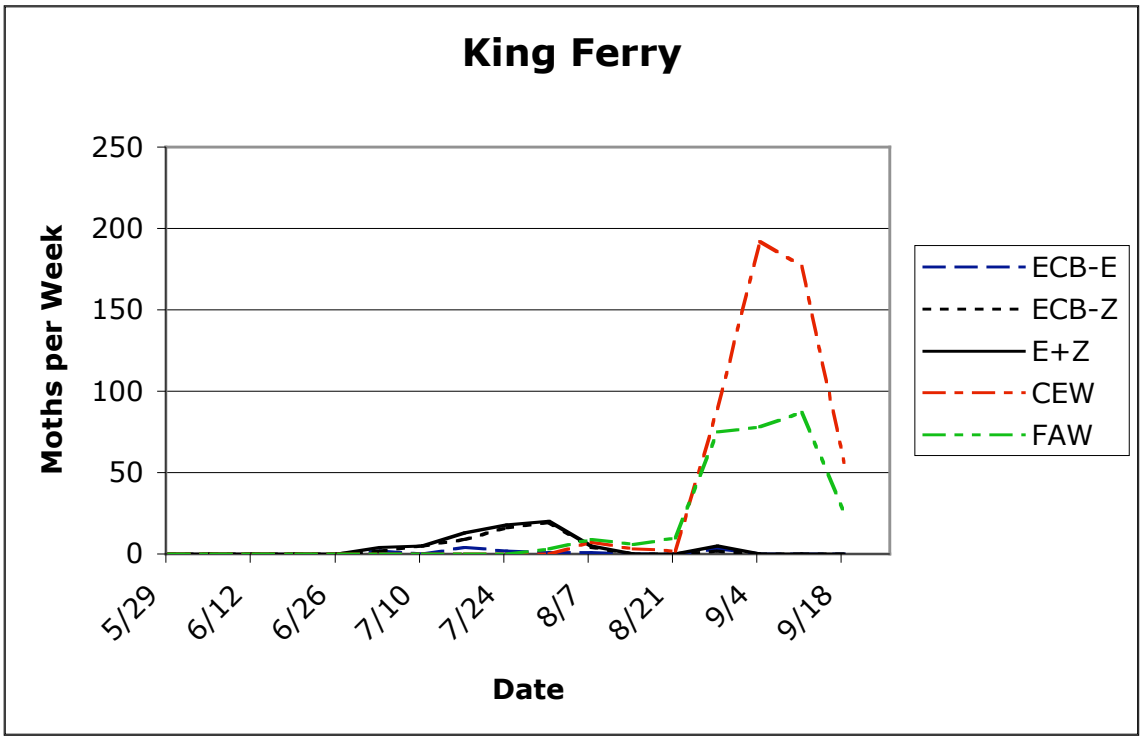

Kennedy
Moths per Week
70
60
50
40
30
20
10
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


King Ferry
Moths per Week
250
200
150
100
50
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

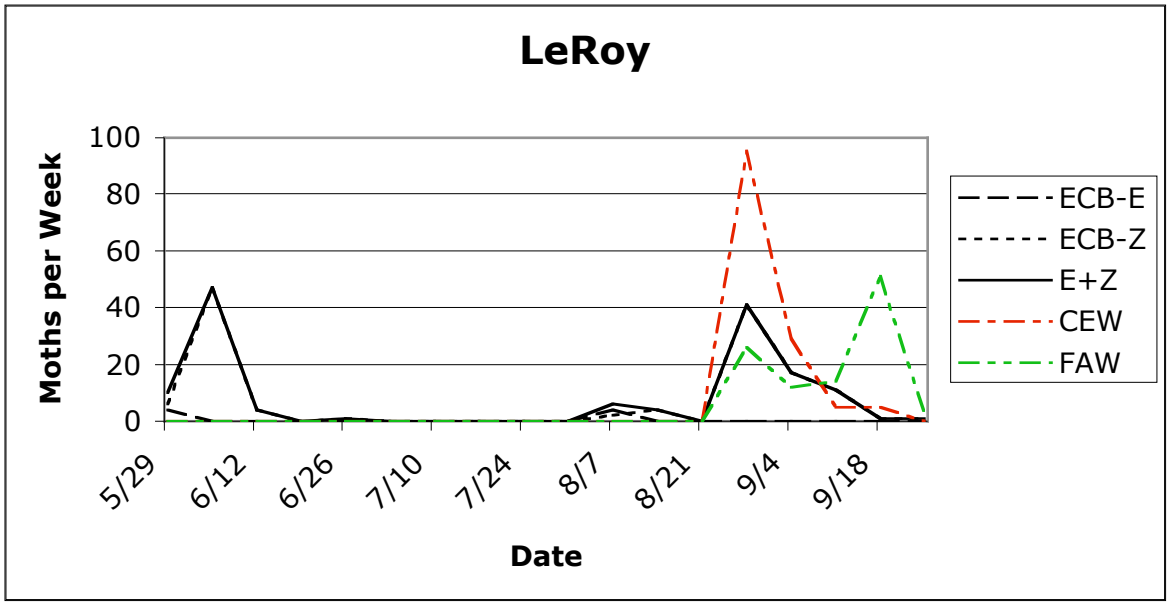
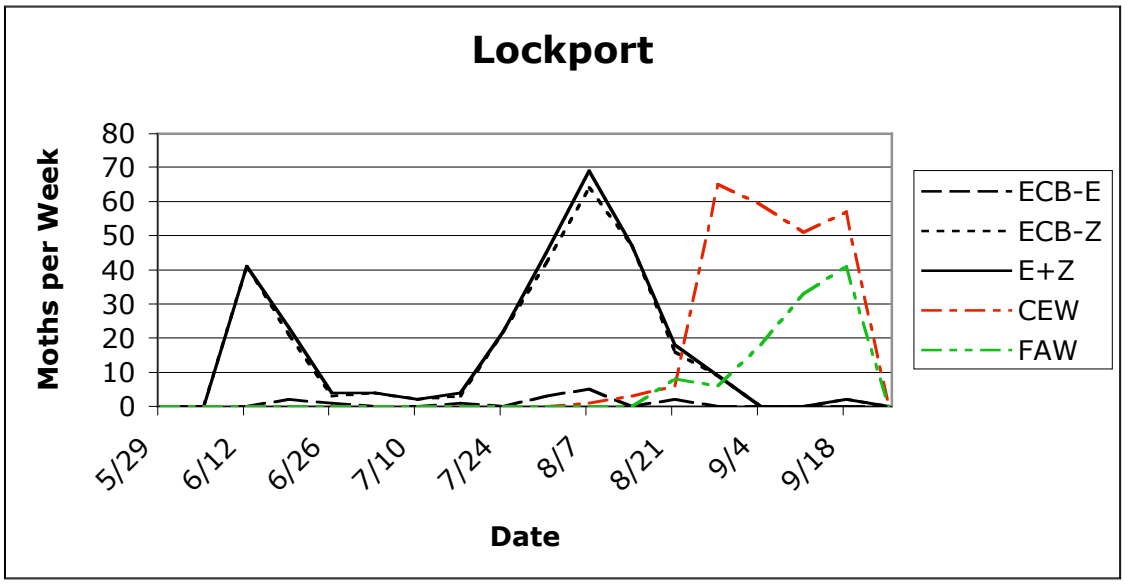

LeRoy
Moths per Week
100
80
60
40
20
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


Lockport
Moths per Week
80
70
60
50
40
30
20
10
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

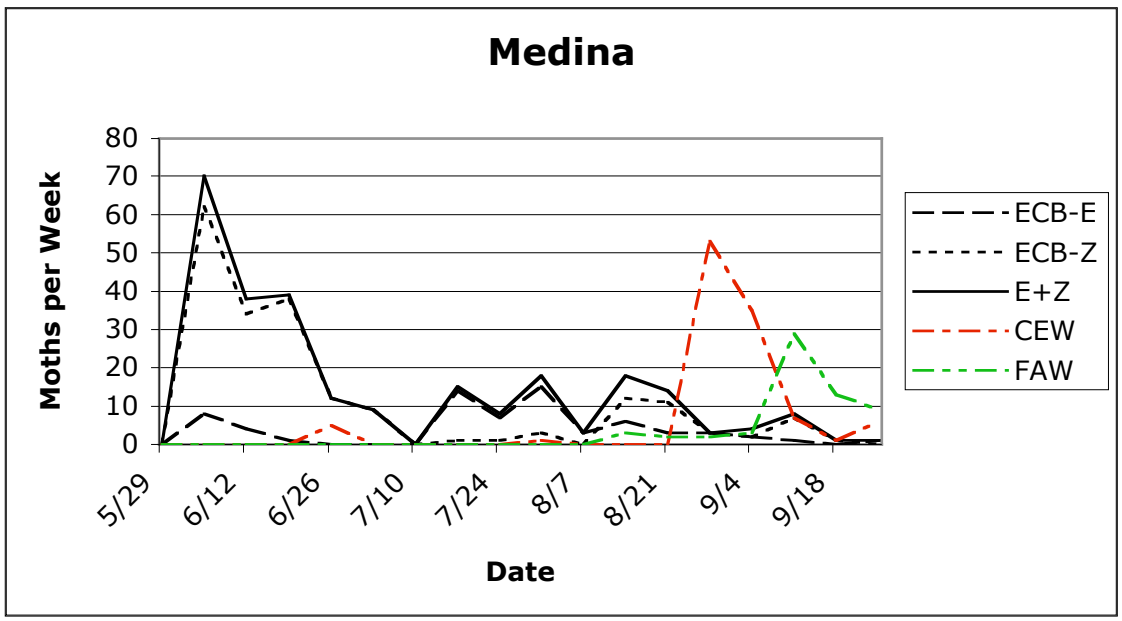
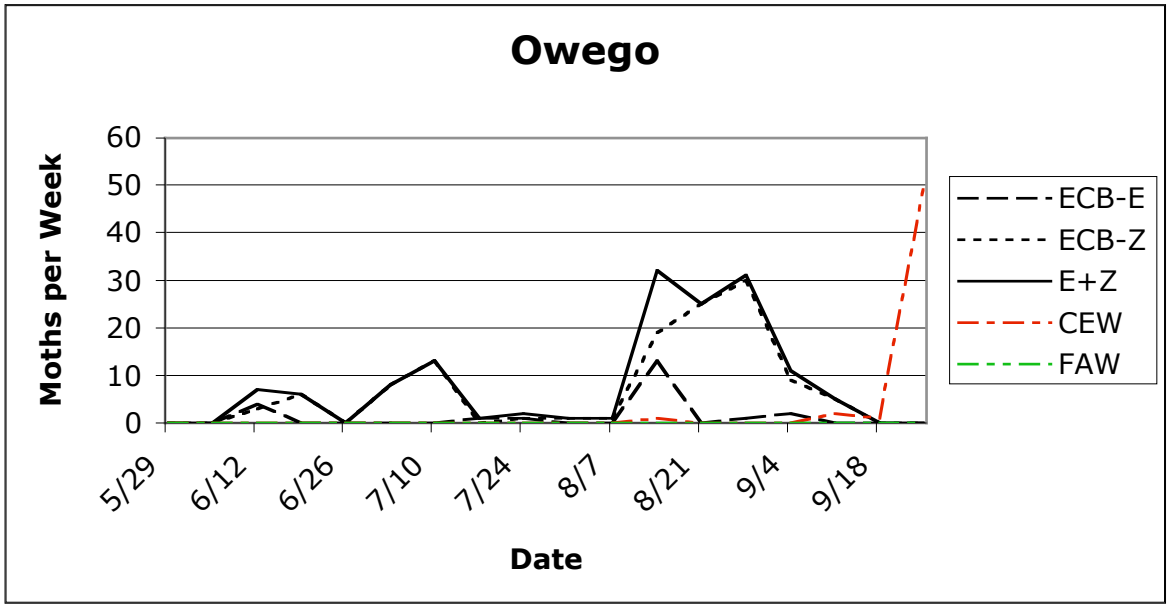

Medina
Moths per Week
80
70
60
50
40
30
20
10
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


Owego
Moths per Week
60
50
40
30
20
10
0
5/29
6/12
6/26
7/10
7/24
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9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

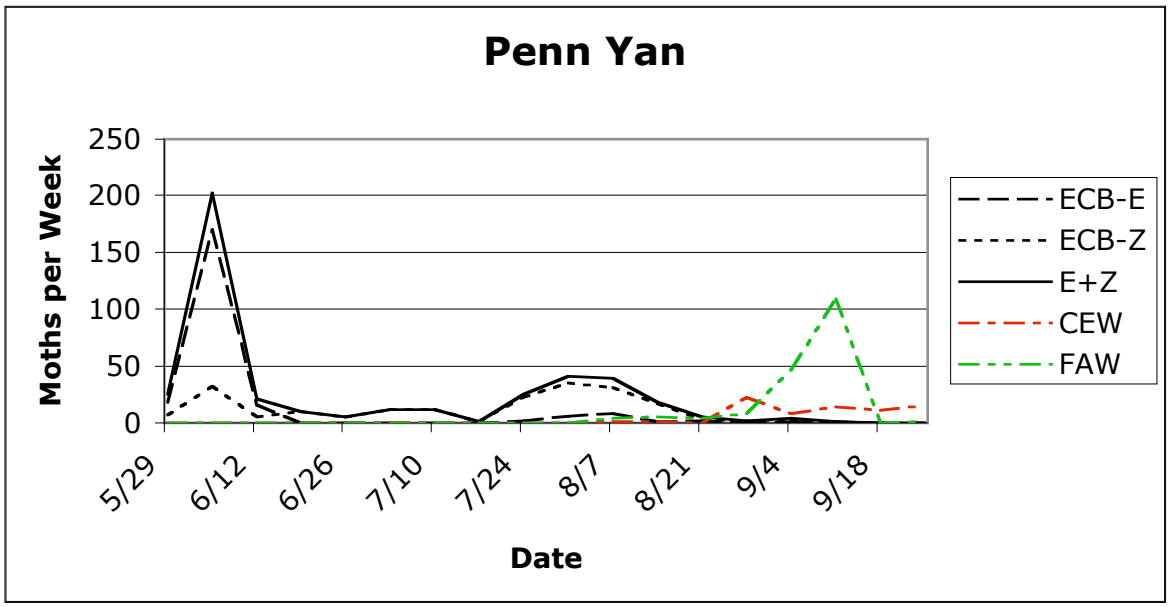
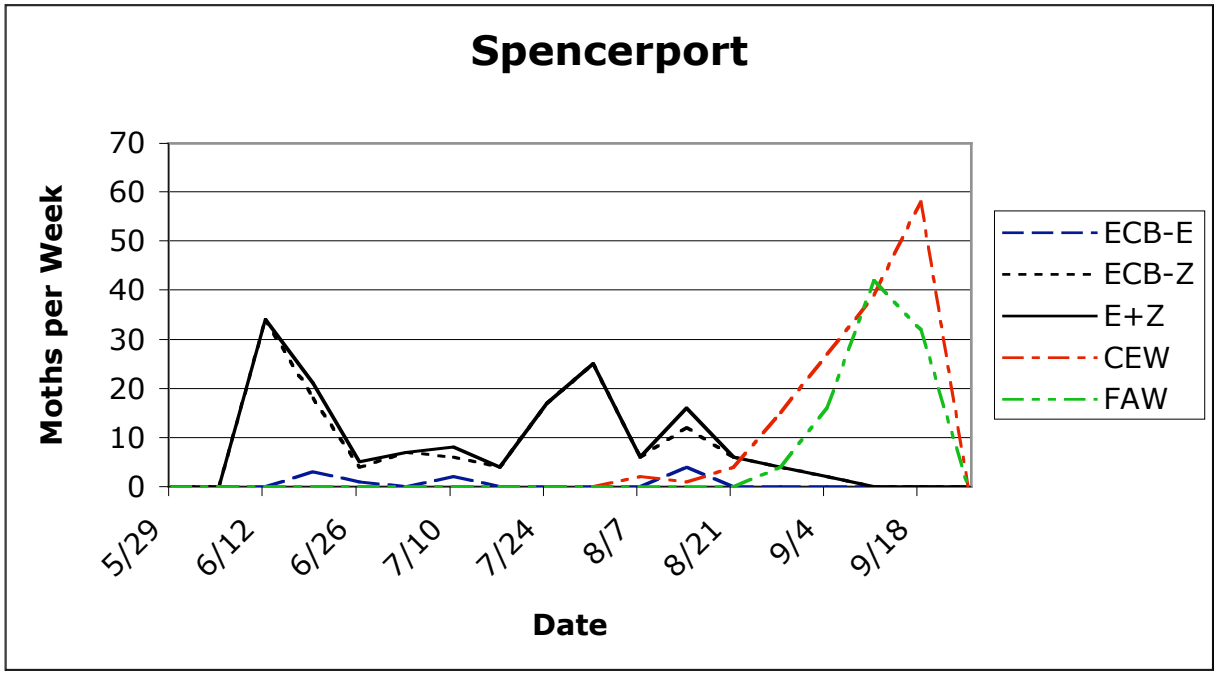

Penn Yan
Moths per Week
250
200
150
100
50
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

Fig 2 (cont.)


Spencerport
Moths per Week
70
60
50
40
30
20
10
0
5/29
6/12
6/26
7/10
7/24
8/7
8/21
9/4
9/18
Date
ECB-E
ECB-Z
E+Z
CEW
FAW

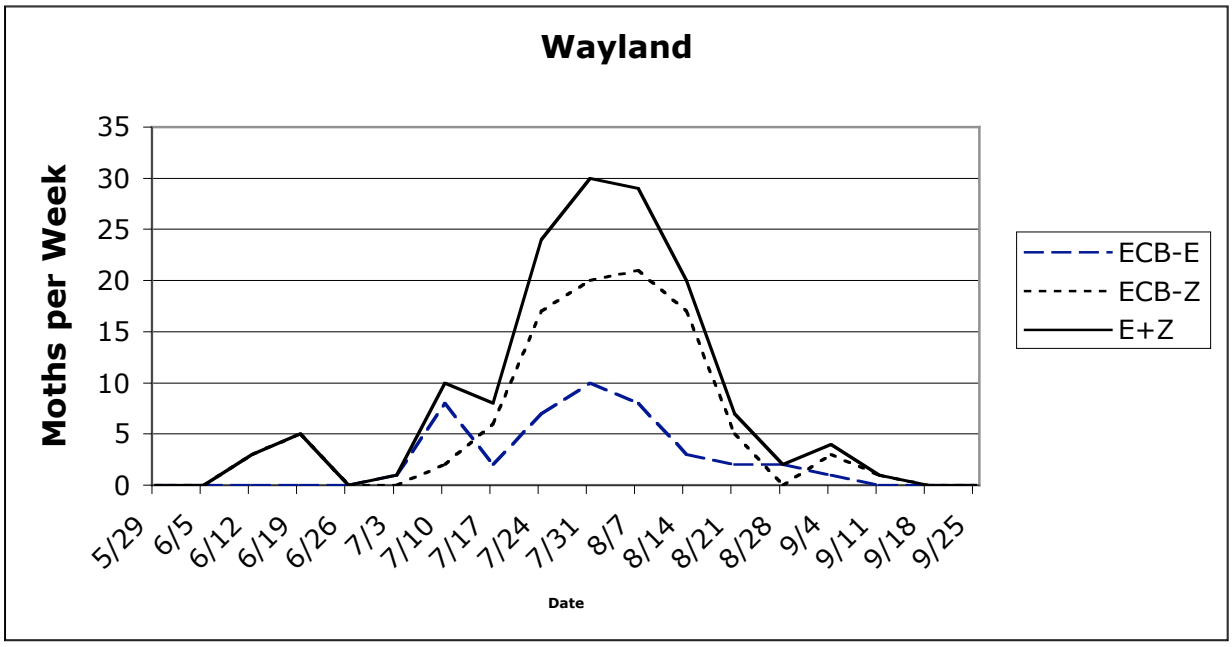
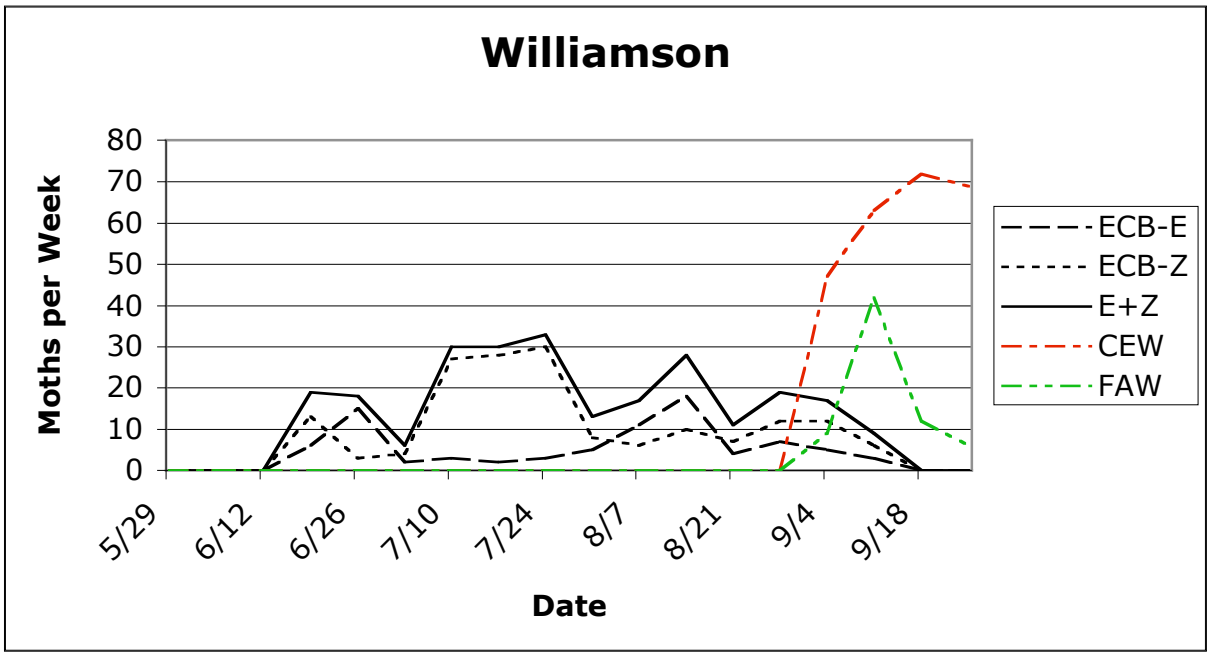

Wayland
Moths per Week
35
30
25
20
15
10
5
0
5/29
6/5
6/12
6/19
6/26
7/3
7/10
7/17
7/24
7/31
8/7
8/14
8/21
8/28
9/4
9/11
9/18
9/25
Date
ECB-E
ECB-Z
E+Z

Fig 2 (cont.)



Project location(s):
Traps were located in Cayuga, Cattaraugus, Chautauqua, Erie, Genesee, Madison, Monroe, Onondaga, Ontario, Orleans, Steuben, Wayne, and Yates counties.